What is claimed is:

1. A lensless optical servo system (100) comprising:

(a) an unfocused, undiffracted light source (102); and

(b) a plurality of photodetectors (104, 106, 108), each photodetector being covered by a geometric pattern filter (110, 112, 114).

2. A lensless optical servo system (100) according to claim 1 wherein said geometric pattern filter (110, 112, 114) is a sinusoidal pattern filter.

3. A lensless optical servo system (100) according to claim 1 wherein said geometric pattern filter (110, 112, 114) is a metalized sinusoidal pattern filter.

4. A lensless optical servo system (100) according to claim 1 wherein said geometric pattern filter (110, 112, 114) is an absorbing sinusoidal pattern filter.

5. A lensless optical servo system (100) according to claim 2 wherein said plurality of photodetectors (104, 106, 108) includes a first photodetector (104) and a second photodetector (106), said first photodetector (104) is covered by a first sinusoidal pattern filter (110) and said second photodetector (106) is covered by a second a sinusoidal pattern filter (112), and said first sinusoidal pattern filter (110) and said second sinusoidal pattern filter (112) are offset from each other by approximately ninety degrees.

6. A lensless optical servo system (100) according to claim 2 wherein said plurality of photodetectors (104, 106, 108) includes a first photodetector (104) and a second photodetector (106), said first photodetector (104) is covered by a first sinusoidal pattern filter (110) and said second photodetector (106) is covered by a second a sinusoidal pattern filter (112), and said first sinusoidal pattern filter (110) and said second sinusoidal pattern filter (112) are offset from each other by approximately one hundred twenty degrees.

7. A lensless optical servo system (100) according to claim 5 wherein said first sinusoidal pattern filter (110) has a first part (110a) and a second part (110b), said first part (110a) of said first sinusoidal pattern filter (110) is spaced apart from and approximately one hundred eighty degrees out of phase with said second part (110b) of said first sinusoidal pattern filter (110), said second sinusoidal pattern filter (112) has a first part (112a) and a second part (112b), and said first part (112a) of said second sinusoidal pattern filter (112) is spaced apart from and approximately one hundred eighty degrees out of phase with said second part (112b) of said second sinusoidal pattern filter (112).

8. A lensless optical servo system (100) according to claim 5 wherein said plurality of photodetectors (104, 106, 108) includes third photodetector (108), said third photodetector (108) is covered by a third sinusoidal pattern filter (114), and said third sinusoidal pattern filter (114) and said second sinusoidal pattern filter (112) are offset from each other by approximately ninety degrees.

9. A lensless optical servo system (100) according to claim 8 wherein said first sinusoidal pattern filter (110) and said third sinusoidal pattern filter (114) are offset from each other by approximately one hundred eighty degrees.

10. A lensless optical servo system (100) according to claim 8 wherein said first sinusoidal pattern filter (110) has a first part (110a) and a second part (110b), said first part (110a) of said first sinusoidal pattern filter (110) is spaced apart from and approximately one hundred eighty degrees out of phase with said second part (110b) of said first sinusoidal pattern filter (110), said second sinusoidal pattern filter (112) has a first part (112a) and a second part (112b), said first part (112a) of said second sinusoidal pattern filter (112) is spaced apart from and approximately one hundred eighty degrees out of phase with said second part (112b) of said second sinusoidal pattern filter (112), said third sinusoidal pattern filter (114) has a first part (114a) and a second part (114b), said first part (114a) of said third sinusoidal pattern filter (112) is spaced apart from and approximately one hundred eighty degrees out of phase with said second part (112b) of said third sinusoidal pattern filter (112).

11. A lensless optical servo system (100) according to claim 10 wherein said first sinusoidal pattern filter (110) and said third sinusoidal pattern filter (114) are offset from each other by approximately one hundred eighty degrees.

12. A lensless optical servo system (100) according to claim 11 wherein said light source (102), said photodetectors (104, 106, 108), and said pattern filters (110, 112, 114) are all formed on a single common substrate.

13. A lensless optical servo system (100) according to claim 12 further comprising means for deflecting light (103) from said laser source (102) to a disc (40).

14. A lensless optical servo system (100) according to claim 13 wherein said light source is a laser diode.

15. A method of making a lensless optical servo system (100) comprising the steps of:

(a) forming an unfocused, undiffracted light source (102) on a substrate (101);

(b) forming a plurality of photodetectors (104, 106, 108) on the substrate (101); and

(c) covering each photodetector with a geometric pattern filter (110, 112, 114).

16. A method of making a lensless optical servo system (100) according to claim 15 wherein said step of covering each photodetector with a geometric pattern filter (110, 112, 114) includes covering each photodetector with a sinusoidal pattern filter.

17. A method of making a lensless optical servo system (100) according to claim 16 wherein said step of forming a plurality of photodetectors (104, 106, 108) includes forming a first photodetector (104) and forming a second photodetector (106), said step of covering includes covering the first photodetector (104) with a first sinusoidal pattern filter (110) and covering the second photodetector (106) with a second sinusoidal pattern filter (112), such that the first sinusoidal pattern filter (110) and the second sinusoidal pattern filter (112) are offset from each other by approximately ninety degrees.

18. A method of making a lensless optical servo system (100) according to claim 17 wherein the first sinusoidal pattern filter (110) has a first part (110a) and a second part (110b), the first part (110a) of the first sinusoidal pattern filter (110) is spaced apart from and approximately one hundred eighty degrees out of phase with the second part (110b) of the first sinusoidal pattern filter (110), the second sinusoidal pattern filter (112) has a first part (112a) and a second part (112b), and the first part (112a) of the second sinusoidal pattern filter (112) is spaced apart from and approximately one hundred eighty degrees out of phase with the second part (112b) of the second sinusoidal pattern filter (112).

19. A method of making a lensless optical servo system (100) according to claim 17 wherein said step of forming a plurality of photodetectors (104, 106, 108) includes forming a third photodetector (108), said step of covering includes covering the third photodetector (108) with a third sinusoidal pattern filter (114), such that the third sinusoidal pattern filter (114) and the second sinusoidal pattern filter (112) are offset from each other by approximately ninety degrees.

20. A method of making a lensless optical servo system (100) according to claim 19, wherein the first sinusoidal pattern filter (110) and the third sinusoidal pattern filter (114) are offset from each other by approximately one hundred eighty degrees.

21. A method of making a lensless optical servo system (100) according to claim 19 wherein the first sinusoidal pattern filter (110) has a first part (110a) and a second part (110b), the first part (110a) of the first sinusoidal pattern filter (110) is spaced apart from and approximately one hundred eighty degrees out of phase with the second part (110b) of the first sinusoidal pattern filter (110), the second sinusoidal pattern filter (112) has a first part (112a) and a second part (112b), the first part (112a) of the second sinusoidal pattern filter (112) is spaced apart from and approximately one hundred eighty degrees out of phase with the second part (112b) of the second sinusoidal pattern filter (112), the third sinusoidal pattern filter (114) has a first part (114a) and a second part (114b), and the first part (114a) of the third sinusoidal pattern filter (114) is spaced apart from and approximately one hundred eighty degrees out of phase with the second part (114b) of the third sinusoidal pattern filter (114).

22. A method of making a lensless optical servo system (100) according to claim 21 wherein the first sinusoidal pattern filter (110) and the third sinusoidal pattern filter (114) are offset from each other by approximately one hundred eighty degrees.

23. A method of making a lensless optical servo system (100) according to claim 22 further comprising the step of rotating said light source (102) to aim the illumination at said second detector (106).

24. A method of making a lensless optical servo system (100) according to claim 22 wherein said step of forming an unfocused, undiffracted light source (102) includes forming a laser diode on the substrate (101).

25. A method of tracking tracks on a rotating data medium having tracking markings thereon, said method comprising the steps of:

(a) aiming an unfocused, undiffracted light at the tracking markings; and

(b) detecting light reflected by the data medium

through a filter which filters all but the light reflected by the markings.

26. A method of tracking tracks on a rotating data medium having tracking markings thereon according to claim 25 wherein said step of detecting includes detecting light through a sinusoidal filter.

27. A method of tracking tracks on a rotating data medium having tracking markings thereon according to claim 26 wherein said step of detecting includes detecting light with two detectors, each detector having a sinusoidal filter, and each filter being offset approximately ninety degrees from the other.

28. A method of tracking tracks on a rotating data medium having tracking markings thereon, according to claim 27 wherein each sinusoidal filter has two parts approximately one hundred eighty degrees out of phase with each other.

29. A method of tracking tracks on a rotating data medium having tracking markings thereon according to claim 26 wherein said step of detecting includes detecting light with first, second and third detectors, each detector has a sinusoidal filter, the first filter is offset approximately ninety degrees from the second filter, and the third filter is offset approximately ninety degrees from the second filter.

30. A method of tracking tracks on a rotating data medium having tracking markings thereon according to claim 29 wherein each sinusoidal filter has two parts approximately one hundred eighty degrees out of phase with each other.

31. A method of tracking tracks on a rotating data medium having tracking markings thereon according to claim 30 wherein the third filter is offset approximately one hundred eighty degrees from the first filter.